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SURVEY FOR SENSITIVE PLANT SPECIES
ON DUTCHMAN MOUNTAIN, BEAVERHEAD COUNTY

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INTRODUCTION

This report describes a botanical survey of Bureau of Land Management (BLM) holdings on Dutchman Mountain in Beaverhead County, Montana. The purpose of this study was to locate and survey populations of potential sensitive or watch species as proposed by the Bureau of Land Management in Montana (USDI Bureau of Land Management 1993). These are taxa identified by State Office of the Bureau of Land Management as warranting sensitive or watch designation based on global rarity, state rarity, and threats.

Surveys to determine the location and size of populations of rare species are being conducted on public lands throughout the west as a result of the Federal Endangered Species Act of 1973 and subsequent Bureau of Land Management species conservation initiatives. Surveys provide baselines needed for the process of developing a list of "sensitive" plant species which occur on BLM lands in Montana and for addressing their conservation in the management planning process.

THE STUDY AREA

The study area consists of approximately 1,100 acres on the east slope of Dutchman Mountain about 8 air miles northwest of Dillon. The mountain lies at the southeastern end of the Pioneer Mountains and is geologically similar to the eastern flank of the range. The study area includes three mapping units of Cretaceous to Mississippian sedimentary rocks (Ruppel et al. 1993). The top of the mountain is covered by boulder fields with almost no soil development, which are sparsely forested by Douglas fir (*Pseudotsuga menziesii*) and Rocky Mountain juniper (*Juniperus scopulorum*). Plant

associations on the slopes of the mountain below the timber are sagebrush grassland types (*Artemisia tridentata/Elymus spicatus* and *A. t./Stipa comata*). The lower ridge which parallels the mountain to the east is composed of younger sedimentary deposits, including limestones and sandstones, and supports a community of forbs. Elevation ranges from about 5,800 to about 7,200 feet.

METHODS

Prior to fieldwork, the Biological Conservation Database maintained by the Montana Natural Heritage Program was queried for records of BLM potential sensitive and watch species known from the southern Pioneer Mountains. This study area and the BLM lands in particular are not well known botanically, so the data search was augmented by information on other state species of special concern tracked by the Montana Natural Heritage Program (Heidel and Poole 1993). For purpose of this report, the term "sensitive" will be used loosely in reference to any currently identified or potentially sensitive species. The data search produced records for 19 sites of eight target species including:

Sapphire rockcress	<i>Arabis fecunda</i>
Jackson's Hole thistle	<i>Cirsium subniveum</i>
Geyer's larkspur	<i>Delphinium geyeri</i>
Wet meadow gentian	<i>Gentiana aquatica</i>
Lemhi beardstongue	<i>Penstemon lemhiensis</i>
Storm saxifrage	<i>Saxifraga apetala</i>
Tufted club-rush	<i>Scirpus cespitosus</i>
undescribed bladderpod	<i>Lesquerella sp. novum</i>

The *Arabis*, *Cirsium*, *Delphinium*, *Lesquerella*, and *Penstemon* were identified as search targets which might potentially inhabit the dry, middle elevation habitats of the study area. Additional targets included species which were encountered by similar surveys of BLM lands in the Tendoy Mountains to the south (Vanderhorst and Lesica 1994).

BLM lands on Dutchman Mountain were surveyed for sensitive species on June 19, 20 and 23, 1993. The area was traversed on foot and all habitat types were visited; Appendix A is a map showing principle travel routes. Lists were made of all vascular plant taxa which could be identified. Whenever sensitive species were encountered, estimates were made of population numbers and the area covered was mapped. Notes were taken on habitat, plant characteristics, and potential threats to the populations and standard field survey forms were filled out. Photographs (35 mm slides) were taken of the plants and their habitats. Specimens of some sensitive other species were collected and will be deposited at the

herbarium at Montana State University (MONT). Duplicate specimens of *Delphinium* were sent to a specialist in the genus, Michael Warnock (Sam Houston State University, Huntsville, Texas) for determination. Nomenclature used in this report follows Dorn (1984), except as variety treatments or superseding species taxonomic treatments have been identified (Heidel and Poole 1993).

RESULTS

A total of 80 taxa of vascular plants were documented in the study area (Appendix B), including three target species: oval-leaved buckwheat (*Eriogonum ovalifolium* var. *nevadense*, Simpson's hedgehog cactus (*Pediocactus simpsonii*), and green prince's-plume (*Stanleya viridiflora*), and an undescribed larkspur (*Delphinium* sp.) which has been identified in the past as two different sensitive species. All four of these were also found on BLM lands in the Tendoy Mountains; descriptions of these plants and information on their geographic distribution, habitat, population biology, and management considerations are detailed in Vanderhorst and Lesica (1994). Information specific to their occurrence on Dutchman Mountain follows. An Element Occurrence Record printout for the *Delphinium* population is provided in Appendix C. Maps showing the populations of these four taxa are included in Appendix D and slides of the plants and their habitats are attached as Appendix E.

The undescribed *Delphinium* has been identified in the past as either *D. andersonii* or *D. geyeri* but Warnock (pers. commun.) claims that neither of these species occurs in Montana. He plans to name the taxon as a new subspecies of *D. bicolor*. In the study area the plants grow in fine textured limestone derived soils in sagebrush steppe communities and on rock outcrops. Plants were also seen nearby outside of the study area along the dirt road between Dutchman Mountain and Birch Creek. Near Birch Creek the plants grew in ground occupied by cattle, and the population was flourishing; no herbivory was observed. This taxon does not seem to be adversely affected, and may even be favored by grazing. It is recommended that this taxon be tracked by the Montana Natural Heritage Program at least until its taxonomic status is resolved and its distribution in the state is determined; however, it does not appear to be threatened by current land uses and BLM sensitive status is not appropriate at this time.

Eriogonum ovalifolium displays a great deal of variation on Dutchman Mountain with morphs ranging in color from pink to cream to bright yellow; yellow forms have been called var. *nevadense*. Forms combining bright yellow flowers with relatively large obovate leaves were mostly confined to rock

outcrops on the low ridge to the east of the mountain. Other forms combining lighter colored flowers with smaller rhomboid leaves were common on the eastern slope of the mountain. *E. ovalifolium* var. *nevadense* has been found to be common in southwestern Montana and was recommended for dropping from the list of state species of special concern (Vanderhorst and Lesica 1994). It does not have a proposed designation by the BLM, and is not appropriate for consideration as such. In this study area, the taxon grows in rocky ground which is not heavily impacted by cattle.

Pediocactus simpsonii has also been recommended for dropping from the list of BLM proposed sensitive species, and from the list of state species of special concern (Vanderhorst and Lesica 1994). This species, which is common in Beaverhead County, was probably mistaken in the past for species of *Coryphantha*. This pincushion cactus is usually partially buried and is resistant to grazing. It grows in sagebrush dominated communities on the rocky, east facing slopes of Dutchman Mountain. The population consisted of scattered large, mostly vegetative plants, suggesting that reproduction at this location may be limited.

Although the population of *Stanleya viridiflora* in the study area was small, this species has also been recommended for dropping as a BLM proposed sensitive species as it is common in canyon habitats in the Tendoy Mountains (Vanderhorst and Lesica 1994). Plants grow out of crevices in the limestone outcrops at the eastern edge of this study area. Many plants were browsed and uprooted, probably by rodents, and its habitat was weedy. Additional potential habitat for this species may be located on adjacent private lands.

Of the target species which were not encountered on Dutchman Mountain, the habitat seems most suitable for *Penstemon lemhiensis*, which grows in sagebrush habitats nearby. Flowering plants of this species were very scarce in 1993 at known populations elsewhere in the Pioneer Mountains and it would have been unlikely to locate unknown populations of vegetative plants. This species, which should be considered sensitive, should be watched for in this vicinity in the future.

The vegetation of the study area is highly impacted by cattle grazing at lower elevations, especially near the road, in the draws, and around saltlicks, but is in progressively better condition on the rocky slopes and mountain top. Livestock do not, however, seem to impact any known populations of sensitive species here.

In conclusion, documentation of four target species has contributed to a better picture of their status, and they have been recommended for dropping from further BLM consideration based in large measure on status information collected outside the study area in concurrent studies and research.

LITERATURE CITED

Dorn, R. D. 1984. Vascular plants of Montana. Mountain West Publishing, Cheyenne, WY.

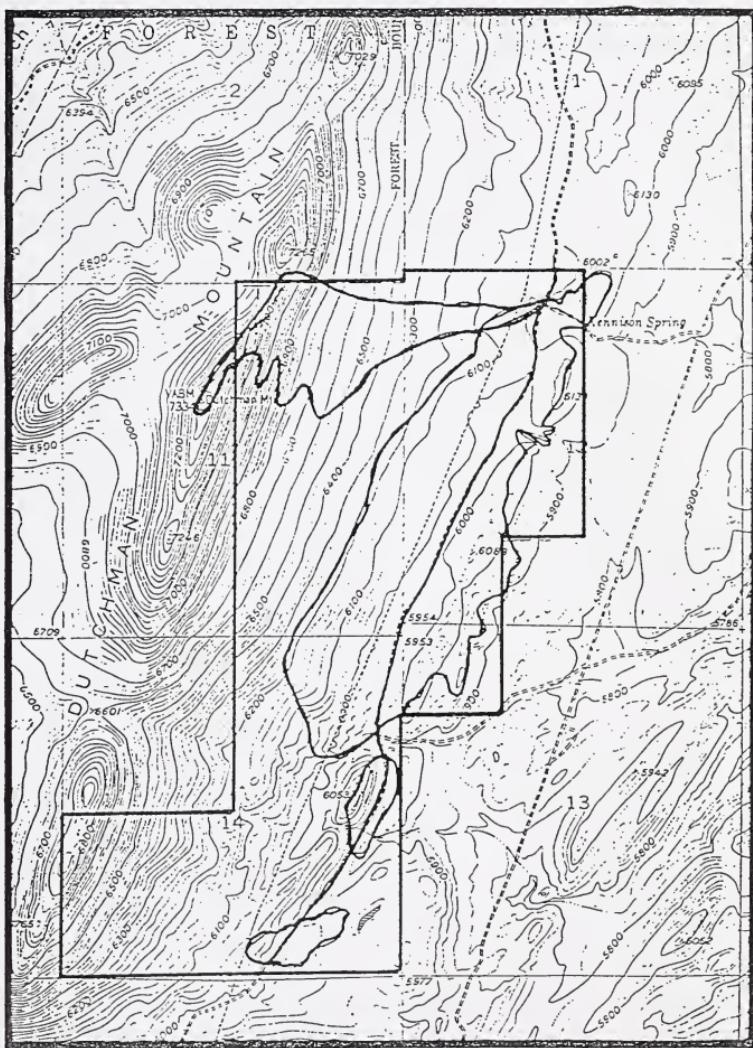
Heidel, B. L. and J. M. Poole. 1993. Montana plant species of special concern. Unpublished list. Montana Natural Heritage Program, Helena, MT.

Ruppel, E. T., J. M. O'Neill, and D. A. Lopez. 1993. Geologic map of the Dillon 1° X 2° Quadrangle, Idaho and Montana. U.S.D.I., U.S. Geological Survey, Map I-1803-H.

USDI Bureau of Land Management. 1993. Draft list of sensitive and watch species in Montana. Billings, MT. Unpubl.

Vanderhorst, J. and P. Lesica. 1994. Sensitive plant species survey in the Tendoy Mountains, Beaverhead County, Montana. Unpublished report to the Butte District, Bureau of Land Management. Montana Natural Heritage Program, Helena. In progress.

APPENDIX A. Map of the study area showing principle search routes. (USGS Argenta Quadrangle 7.5')



APPENDIX B. Vascular plants identified on BLM lands on Dutchman Mountain, June 19-23, 1993. Nomenclature follows Dorn (1984). Taxa in bold were collected and specimens will be deposited at MONT.

<i>Achillea millefolium</i>	<i>Juniperus scopulorum</i>
<i>Agoseris glauca</i>	<i>Lappula redowskii</i>
<i>Allium textile</i>	<i>Leptodactylon pungens</i>
<i>Androsace septentrionalis</i>	<i>Lesquerella alpina</i>
<i>Antennaria microphylla</i>	<i>Lewisia rediviva</i>
<i>Antennaria parviflora</i>	<i>Mentzelia albicaulis</i>
<i>Arabis holboellii</i>	<i>Musineon divaricatum</i>
<i>Arenaria</i> sp.	<i>Opuntia polyacantha</i>
<i>Arnica cordifolia</i>	<i>Oryzopsis hymenoides</i>
<i>Arnica fulgens</i>	<i>Oxytropis lagopus</i>
<i>Artemisia frigida</i>	<i>Oxytropis sericea</i>
<i>Artemisia tridentata</i>	<i>Pediocactus simpsonii</i>
<i>Aster scopulorum</i>	<i>Penstemon aridus</i>
<i>Astragalus adsurgens</i>	<i>Penstemon eriantherus</i>
<i>Astragalus agrestis</i>	<i>Penstemon radicosus</i>
<i>Astragalus atropubescens</i>	<i>Phacelia linearis</i>
<i>Astragalus drummondii</i>	<i>Phlox bryoides</i>
<i>Astragalus miser</i>	<i>Phlox longifolia</i>
<i>Bouteloua gracilis</i>	<i>Pinus flexilis</i>
<i>Bromus tectorum</i>	<i>Poa</i> sp.
<i>Camelina microcarpa</i>	<i>Potentilla glandulosa</i>
<i>Castilleja hispida</i>	<i>Potentilla pensylvanica</i>
<i>Castilleja pallescens</i>	<i>Pseudotsuga menziesii</i>
<i>Chenopodium</i> sp.	<i>Ribes cereum</i>
<i>Chrysothamnus viscidiflorus</i>	<i>Rubus idaeus</i>
<i>Cornus stolonifera</i>	<i>Sedum lanceolatum</i>
<i>Crepis modocensis</i>	<i>Selaginella densa</i>
<i>Cryptantha</i> sp.	<i>Senecio canus</i>
<i>Cynoglossum officinale</i>	<i>Stanleya viridiflora</i>
<i>Cymopterus bipinnatus</i>	<i>Stipa comata</i>
<i>Delphinium bicolor</i> ssp. <i>novum</i>	<i>Stipa viridula</i>
<i>Descurainia richardsonii</i>	<i>Tragopogon dubius</i>
<i>Elymus cinereus</i>	<i>Zigadenus venenosus</i>
<i>Elymus spicatus</i>	
<i>Erigeron caespitosus</i>	
<i>Erigeron compositus</i>	
<i>Eriogonum flavum</i>	
<i>Eriogonum mancum</i>	
<i>Eriogonum ovalifolium</i> var. <i>nevadense</i>	
<i>Eriogonum umbellatum</i>	
<i>Erysimum asperum</i>	
<i>Gutierrezia sarothrae</i>	
<i>Haplopappus acaulis</i>	
<i>Hedysarum boreale</i>	
<i>Heuchera cylindrica</i>	
<i>Heuchera parvifolia</i>	
<i>Hordeum jubatum</i>	

APPENDIX C. Element Occurrence Record for *Delphinium bicolor*
ssp. *novum*.

MONTANA NATURAL HERITAGE PROGRAM
Element Occurrence Record

Scientific Name: DELPHINIUM BICOLOR SSP NOVUM
Common Name: UNDESCRIPTED LARKSPUR

Global rank: G3 Forest Service status:
State rank: S2S3 Federal Status:

Element occurrence code: PDRANNOV01.011
Element occurrence type:

Survey site name: LONG JOHN ROAD
EO rank: B
EO rank comments: VIGOR OF PLANTS VARIES IN AREA.

County: BEAVERHEAD

USGS quadrangle: ARGENTA

Township: Range: Section: TRS comments:
006S 010W 12 W2; 13 NW4; 01 CENTER
005S 009W 31 SW4

Precision: S
Survey date: 1993-06-19 Elevation: 5980 - 6040
First observation: 1993-06-19 Slope/aspect:
Last observation: 1993-06-19 Size (acres): 100

Location:

TAKE BIRCH CREEK EXIT OFF I-15 11 MILES NORTH OF DILLON. FOLLOW GRAVEL ROAD WEST 2.5 MILES, THEN TURN RIGHT ON LONG JOHN ROAD. PLANTS ARE ALONG ROAD AND IN OTHER HABITAT IN AREA.

Element occurrence data:

1000+ INDIVIDUALS IN SUBPOPULATIONS ALONG 3 MILES OF ROAD. MOSTLY FLOWERING; 1 PLANT SEEN IN FRUIT. PLANTS MOST VIGOROUS IN LOW-ELEVATION GRAZED SAGEBRUSH GRASSLAND.

General site description:

OPEN, DRY SEDIMENTARY RIDGES AND BENCHES, LIMESTONE PARENT MATERIAL, FINE SOIL. ASSOCIATED SPECIES: ARTEMISIA TRIDENTATA, ELYMUS SPICATUS, POA SP., STIPA COMATA, LEWISIA REDIVIVA, MUSINEON DIVARICATUM, OPUNTIA POLYACANTHA, ALLIUM TEXTILE, ARENARIA ACULEATA, PENSTEMON ARIDUS.

Land owner/manager:

BLM: BUTTE DISTRICT, DILLON RESOURCE AREA
PRIVATELY OWNED LAND (INDIVIDUAL OR CORPORATE)

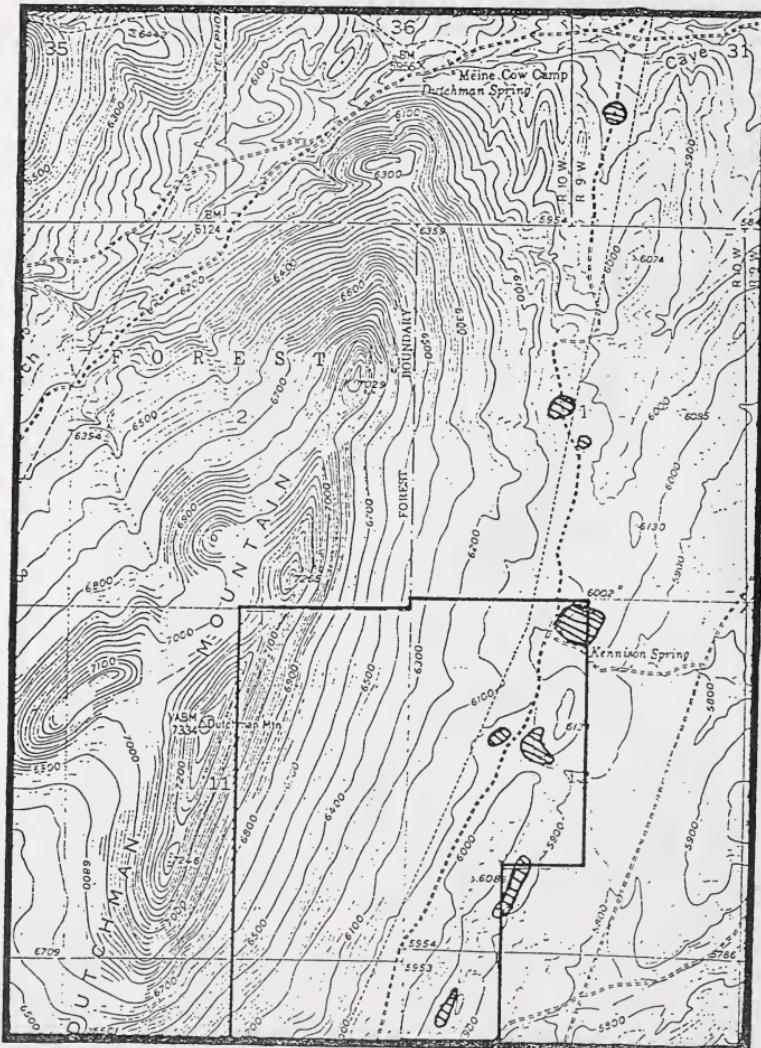
Comments:

ACTIVE GRAZING ALLOTMENT. SPECIES SEEMS TO RESPOND WELL TO GRAZING.

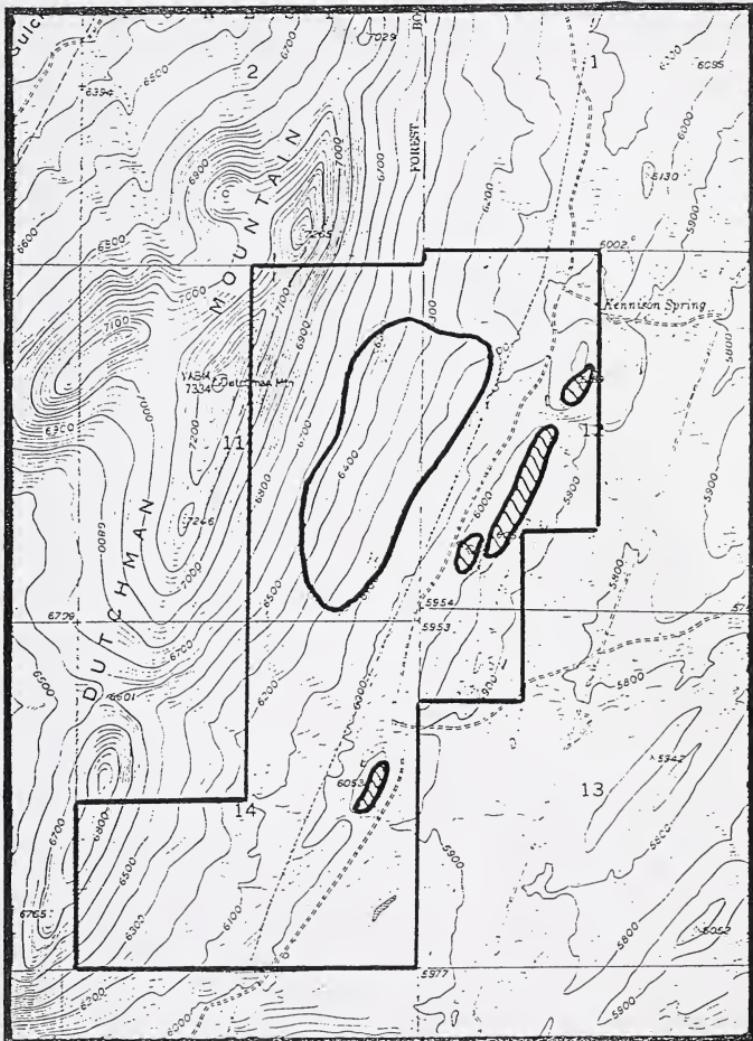
Information source: VANDERHORST, J. 1993. [MTNHP FIELD SURVEYS CONDUCTED AT DUTCHMAN MOUNTAIN FOR THE BUREAU OF LAND MANAGEMENT.]

Specimens: VANDERHORST, J. (4966, 4968). 1993.

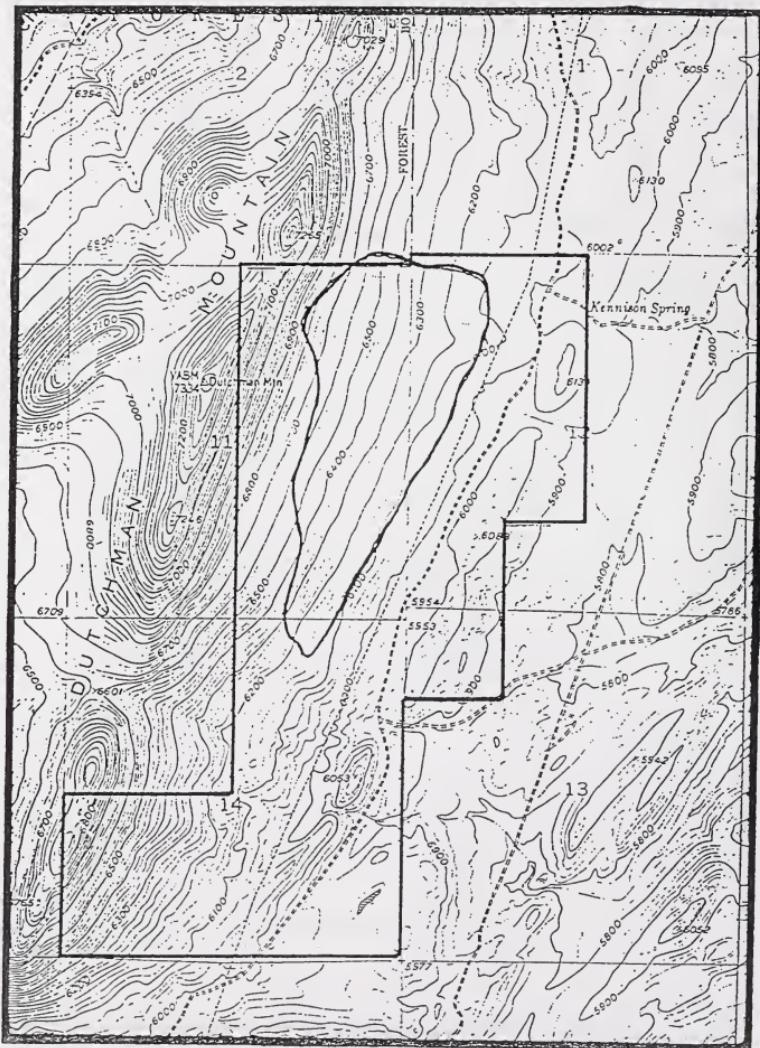
APPENDIX D. Maps showing populations of sensitive species in
the study area. (USGS Argenta Quadrangle 7.5')



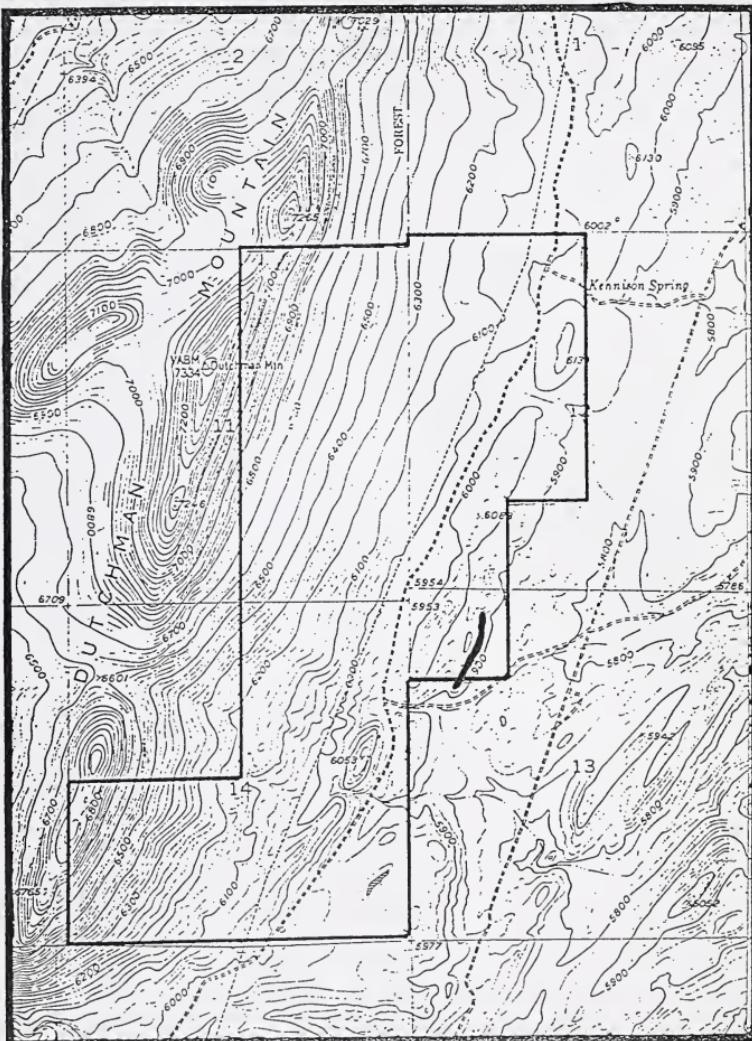
Delphinium bicolor ssp. novum
USGS Argenta Quad, 7.5'



Eriogonum ovalifolium var. *nevadense*
USGS Argenta Quad, 7.5'



Pediocactus simpsonii
USGS Argenta Quad, 7.5'



Stanleya viridiflora
USGS Argenta Quad, 7.5'

APPENDIX E. Photographic slides

Slide 5. *Stanleya viridiflora*

Slide 6. *Pediocactus simpsonii*

Slide 8. *P. simpsonii* habitat

Slide 9. *Delphinium bicolor* ssp. *novum*

Slide 10. *Delphinium* habitat

Slide 22. *Eriogonum ovalifolium* var. *nevadense*



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